Selected Abstracts from the June Issue of the European Journal of Vascular and Endovascular Surgery

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Association between Plaque Echogenicity and Embolic Material Captured in Filter during Protected Carotid Angioplasty and Stenting

Giannakopoulos T.G., Moulakakis K., Sfyroeras G.S., Avgerinos E.D., Antonopoulos C.N., Kakisis J.D., Karakitsos P., Brountzos E.N., Liapis C.D. Eur J Vasc Endovasc Surg 2012;43:627-31.

Objectives/design: The aim of the study was to investigate debris captured in filter embolic protection devices (EPDs) during carotid artery stenting (CAS) and its possible correlation with plaque echogenicity and other risk factors.

Materials/methods: Between June 2010 and March 2011, 51 consecutive CAS patients (11 females, mean age 71.2 ± 7, 10 symptomatic) who underwent 53 procedures were included in this prospective study. Ultrasonographic Gray-Weale plaque type (I–V, echolucent to echogenic) characterisation was obtained in all cases. The same type of stent and filter EPD was used. Filters were collected and, after macroscopic evaluation, they were examined using the Thin-Prep® liquid-based cytology (LBC) technique.

Results: Technical success was 100%. Thirty-day stroke and death rates were 1.8% (1/53) and 0%, respectively. Visible debris was detected in eight (15%) filters, whereas LBC revealed the presence of embolic material particles in 30 filters (56.6%). The presence of embolic material into the filter EPD was 2.38-fold increased for every category change from type IV to type I carotid plaques (OR = 2.38, 95% CI = 1.15-4.93). This association remained robust even after adjustment for age, gender and known atherosclerotic disease risk factors (OR = 2.26, 95% CI = 1.02–5.02). In multivariate analysis for risk factors, hypertension was associated with increased presence of embolic material detection in filter EPD (OR = 20.4, 95% CI = 1.28–326.1). The time distance from symptom to CAS was inversely correlated with debris quantity in EPD (Spearman rho −0.716; $P = 0.02$).

Conclusions: Echolucent plaques, smaller time frame from last symptom and hypertension were associated with increased presence of embolic material.

Asymptomatic Carotid Artery Stenosis: Identification of Subgroups with Different Underlying Plaque Characteristics

van Lammeren G.W., den Hartog A.G., Pasterkamp G., Vink A., de Vries J.-P.P.M., Moll F.L., de Borst G.J. Eur J Vasc Endovasc Surg 2012;43:632-6.

Objectives: Optimal surgical treatment of patients with asymptomatic carotid artery stenosis (ACAS) remains a matter of debate. Established definitions of ACAS include: (1) patients who never suffered from ipsilateral cerebrovascular events (group 1) or (2) patients who suffered from ipsilateral cerebrovascular events more than 6 months prior to revascularisation (group 2). Cerebrovascular symptoms are closely related to underlying carotid plaque composition and therefore we investigated potential plaque differences between these definition-based subgroups.

Design: Cross-sectional analysis of a longitudinal prospective biobank study.

Material and methods: Carotid atherosclerotic plaques from 264 asymptomatic patients were harvested during endarterectomy, and subjected to histopathological examination. Patients were divided into two groups: group 1: truly asymptomatic ($n = 182$), and group 2: patients with ipsilateral events more than 6 months before carotid endarterectomy (CEA) ($n = 82$).

Results: Patients in group 1 had relatively more stable plaque characteristics as compared with patients in group 2, with a higher median plaque smooth muscle cell content (2.1 (0.0–18.7) vs. 1.6 (0.0–14.4); $P = 0.036$), a higher proportion of heavily calcified plaques (67.7% (123/182) vs. 48.8% (40/82); $P = 0.005$) and less frequently intraplaque haemorrhages (11.5% (21/182) vs. 30.5% (25/82); $P = 0.001$).

Conclusion: Different plaque characteristics within subgroups of ACAS patients can be identified based on reported past ipsilateral events, which might result in adjusted future treatment strategies.

Development of Off-the-shelf Stent Grafts for Juxtarenal Abdominal Aortic Aneurysms

Resch T.A., Dias N.V., Sobocinski J., Sonesson B., Roeder B., Haulon S. Eur J Vasc Endovasc Surg 2012;43:655-60.

Introduction: The use of EVAR for more complex aneurysm anatomy has become more widespread over the past decade. Fenestrated and branched stent grafts for the visceral and iliac segment show promising short- and midterm outcome and these procedures have become routine in many vascular centers. However, at present, such grafts are customized to the individual patient and planning and manufacturing leads to significant treatment delay subjecting the patients to the risk of rupture during the waiting period. The purpose of this report is to describe the first experience in treating juxta/suprarenal aneurysms using the first version of a new fenestrated stent graft.

Material and Methods: A fenestrated device was designed with two renal fenestrations, an SMA fenestration and a scallop for the coeliac artery. The renal arteries were designed with an inner 6 mm fenestration and an outer 15 mm diameter creating a dome to allow renal artery catheterization for a range of renal artery distribution. Seven patients with complex visceral artery anatomy were treated with customized stent grafts containing these pivot renal fenestrations.

Results: Technical success was uniform with 100% target vessel catheterization and 0% 30-day mortality. In one case, the graft was displaced slightly during delivery resulting in a renal artery stent occlusion at 2 months postoperatively.

Conclusions: The development of a modified fenestrated device has shown this to be feasible and it has the potential to reduce the need for extensive preoperative graft customization and establishing a true off the shelf platform for juxta- and suprarenal AAA.

Diagnostic Laparoscopy for Early Detection of Acute Mesenteric Ischaemia in Patients with Aortic Dissection

Tshomba Y., Coppi G., Marone E.M., Bertoglio L., Kahlberg A., Carlucci M., Chiesa R. Eur J Vasc Endovasc Surg 2012;43:690-7.

Introduction: Recognition of acute mesenteric ischaemia (AMesI) in patients with aortic dissection (AoD) may be a challenge and exploratory laparotomy is often performed.

Methods: We retrospectively analysed our experience with the use of diagnostic laparoscopy (DL) for the early detection of AMesI in patients with AoD, either undergoing medical treatment or after open/endovascular interventions.

Results: Between 2004 and 2011, 202 consecutive AoDs were treated in our centre (71 acute type A AoD; 131 acute and chronic type B AoD). Among the 17 (8.4%) patients in which AMesI was suspected, nine (52.9%) were selected for DL. Three DLs were performed during medical treatment of patients with acute type B AoD, six after treatment of AoD (both surgical and endovascular). Three second-look DLs were also performed. Eight DLs were negative, three showed AMesI and the patients underwent successful emergent revascularisation. One DL was not conclusive and laparotomy was required. Among the eight patients not submitted to DL, one case of bowel infarction was recorded.

Conclusions: In our series DL was feasible and safe. The low invasiveness and repeatability were the main advantages. Although additional experience is mandatory, DL seems a promising technique for the detection of AMesI in patients with AoD.

Early and Late Results of *Ex–Vivo* Repair and Autotransplantation in Solitary Kidneys

Morin J., Chavent B., Duprey A., Albertini J.N., Favre J.P., Barral X. Eur J Vasc Endovasc Surg 2012;43:716-20.

Introduction: Autotransplantation of a solitary kidney provides an excellent opportunity to study the immediate and long-term consequences of intra-operative renal ischaemia. The purpose of this report is to describe a series of nine patients who underwent *ex vivo* repair and autotransplantation on solitary kidneys.

Patients and methods: The series included six females and three males with a mean age of 36 years. Seven of the nine patients were hypertensive (mean number of anti-hypertensive agents: 3). Two patients had chronic renal failure (serum creatinine levels: 192 and 205 $\mu mol\ l^{-1}$). All arteries except one with Takayasu disease were affected by dysplastic aneurysm or fibrodysplasia lesion. There was no atherosclerotic lesion. The mean number of renal artery branches repaired was 3.1 per patient. Mean duration of ischaemia was 161 min.